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ABSTRACT

This study presents phonological and lexical data describing the speech of a two-year-old acquiring English and French simultaneously. After establishing the child's phonological system(s), four categories of lexical items are described: (1) the child knows and uses both the English and French lexical item; (2) the child is confused by identical meaning yet slightly different phonological form (i.e., cognates); (3) the child is exposed to only one form, and thus uses a lexical item only in one language; and (4) the child has been exposed to both the English and French equivalents but avoids the phonolcgically mcre difficult form. Following these data, the second category (i.e., cognates) is discussed briefly, and the fourth category (i.e., phonological avoidance) is treated in some detail. These findings could also have some relevance for foreign language teaching in that it appears that unnecessary phonological barriers may cause psychological problems, stunt fluency and inhibit ease of language learning. (Author/CFM)

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Phonological factors in vocabulary acquisition: A case study of a two-year-old, English-French bilingual [1]

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Abstract

This study presents phonological and lexical data describing the speech of a two-year-old acquiring English and French simultaneously. After establishing the child's phonological system(s), four categories of lexical items are described: (1) the child knows and uses both the English and French lexical item, (2) the child is confused by identical meaning yet slightly different phonological form (i.e. cognates), (3) the child is exposed to only one form, and thus uses, a lexical item only in one language, and (4) the child has been exposed to both the English and French equivalents but avoids the phonologically more difficult form.

Following these data, the second category (i.e. cognates) is discussed briefly, and the fourth category (i.e. phonological avoidance) is treated in some detail.

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Phonological factors in vocabulary acquisition: A case study of a two-year-old, English-French bilingual [1]

Marianne Celce-Murcia
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Introduction

What follows is a description of the English and French phonology and vocabulary that my daughter Caroline had acquired when she was two years and four months of age (date of birth: Oct. 27, 1972; residence: Santa Monica, California).

Caroline's father, who is a native speaker of French and who spends several hours a day with her, speaks to her primarily --though not exclusively--in French, whereas I, a native speaker of American English, use predominantly English with her and spend somewhat more time with her than her father.

Caroline hears us speak to each other in both languages. It would have been artificial to keep the two languages apart as has been the case in some other studies, e.g. Leopold (1939-1949), since we both speak the other's language fluently. Moreover, having been married for seven years prior to Caroline's birth, we had become accustomed to using either English or French with each other. Therefore, Caroline is growing up in an environment where it seems natural for adults to speak both English and French.

Outside the home, Caroline spends three full days per week with a babysitter, (a monolingual speaker of English) who has two children--a five-year-old boy and a six-year-old girl. English, therefore, has the edge over French in vocabulary and syntax. However, French is well understood by Caroline and many of her vocabulary items and some of her sounds are distinctively French.

Caroline is physically large for her age (2:4). She is 38 1/2" tall, weighs 34-35 lbs, wears a dress size of 4 or 5, and her shoe size is nine. Her features also appear mature with the result that people often guess her to be 3:6 or even 4 years of age. She started to walk between 10 and 11 months

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[1] An oral report of this research was presented at the March, 1975 TESOL Conference in Los Angeles.

My sincere thanks to Evelyn Hatch, who encouraged me to carry out this study and who kept after me until I wrote it up. Without her support the study and this paper would not have materialized.

of age and is very active: runs, jumps, climbs and does not sleep much. She was saying the words "Mama" and "Baba" to me and her father at 10 months of age and she used these two words in her first major piece of communication at the age of 12 months. I came home from UCLA one day at about 5:30 p.m. Caroline heard my key in the door and came running. She said, "Mama, Mama." Then she ran toward the kitchen where her father was cooking some vegetables and said, "Baba, Mama!" while she pointed toward the front door.

Caroline has a personality to match. She is aggressive to the point of being a bully; she is uninhibited: she sings, dances, or screams whenever and wherever it suits her; she is sociable, outgoing, demonstrative, and very jealous of her father's attention.

The data reported below were collected during the two-month period when Caroline's age ranged from 2;2 to 2;4. They were collected from memory rather than through tape recordings. Every evening, after putting her to bed, I would spend at least 10 to 15 minutes transcribing on cards all the new words and 'sentences' I had heard her produce that day. Care was taken to capture her deviant and often varying pronunciation.

Phonology

In terms of phonological development Caroline displays most of the simplification patterns discussed in some detail in Oller (1974). Her vowel system was more fully developed in the early stages than her consonant system.
Early vowels were the front vowels and the low central vowel:

(1) [a] -- [mama] Mama

[e], [i] -- [bebi] baby

[ɛ] -- [bɛt] bed

[aI] -- [haI] hi!

Back vowels and diphthongs involving back vowels were more difficult and came later:

(2) [o] -- [dodo] (Fr. babytalk 'sleep')

[u] -- [pupi] (Fr. babytalk for 'doll')

[ɔ] -- [bɔl] ball

[ɔI] -- [bɔI] boy

[au] -- [kaun] c(l)own

The tense vowels [i], [e], [o], and [u] do not seem to have the strong I and U glides, typical of English.
She sometimes has problems (though not always) with the vowels [ʌ], [ɪ], and [æ]:
(3) [ʌ]-→ [a], [bas] bus

[ɪ]-→ [i], [big] big

[æ]-→ [a], [(h)api] happy

The biggest problem is [ʊ]-→ [u], i.e. [bʊk] book pronounced as [buk].
She can produce the two rounded French vowels nicely:
(4) [y]-- [bys] (Fr. 'bus')

(le) [barby] (Fr. 'the bearded one')

[ø]-- [øf] (Fr. 'egg')

[ø] (Fr. pronunciation for the letter 'E')

She does not produce most nasalized French vowels consistently--the only two words that she nasalizes with any regularity are [pæ̃] pain 'bread' and [bæ̃] bain 'bath'. Other French words she uses like papillon 'butterfly', poisson 'fish', maman 'mother', typically occur without nasalization of the final vowel.

Her consonant system is much more complicated.
Stops:
Initial voiceless stops are usually not aspirated and in fact are often voiced:
(5) [baba] -- papa

[bæ̃] -- pain (Fr. 'bread')

Her final stops are heavily articulated and voiced stops are typically devoiced:
(6) [bEt] bed

[mat] mad

[bik] big

[dɔk] dog

[Ek] egg etc.

Her medial 't' is strongly articulated, [pati] 'potty' perhaps in imitation of her father.

Nasals:

The three English nasals all occur.
In initial and final position she produces [m] and[n]:

(7) [m] -- [mama]

[dumdum] (= 'chewing gum')

[n] -- [nunu] (Fr. 'Teddy Bear')

[Endien] Indian

In final position she has [ŋ]:

(8) [ŋ] -- [wIŋ] swing

[wɔkIŋ] working

Fricatives:

Fricatives are a real problem area for Caroline.
Initial [h] is usually deleted--except for a few words like 'hi!' Modifications of initial and medial fricatives include:

(9) [θ] → [d] [dankju] thank you

[ð] → [d] [dat] that

[f] → [w] [wiwi] Fifi

[kɔwɛk] coffee

[won] phone

[v] → [w] [wal] cheval, i.e. Fr. 'horse'

[wæ̃] vin, i.e. Fr. 'wine'

[s] → [z] [zuzan] Susan

[zɔzio] sorcière, i.e. Fr. 'witch'

Readjustments Caroline made in articulating fricatives in final position are:

(10) [θ] → [s] or [ʃ] [tis ~ tiʃ] teeth

[f] → [k] [ɔk] off

→ [s] [ɛs] F

[s] → [θ] [baθ] bus

[kiθ] kiss

The fricative [s] is also deleted in many environments. For example:

(11) [du] juice

[maʊ] mouse

The fricative [ʃ] is often omitted initially:

(12) [æmpu] shampoo

[apo] chapeau, i.e. Fr. 'hat'

The fricative [ʒ] goes to [j] initially and gets devoiced to [ʃ] finally:

(13) [ʒ] → [j] [jon] jaune (Fr. 'hellow')

[ʒ] → [ʃ] [uʃ] rouge (Fr. 'red')

The phoneme [z] is relatively easy for Caroline to produce:

(14) [zezi] Leslie

[bizu] bisou (Fr. 'kiss')

[zu] zoo

[ziba] zebra

[zIp] zip

Affricates:

These complex consonants are often simplified to stops initially:

(15) [dʒ] -- [du] juice

[tʃ] -- [tija] or [tæ] chair

[tijo] "Cheerios"

Caroline has better success with affricates medially and finally:

(16) [dʒ] -- [dɔdʒi] Georgie

[tʃ] -- [witʃ] witch

[biwItʃ] bewitched

(learned from watching the TV program of the same name with Elizabeth Montgomery)

Liquids:

The sounds [r] and [l] are very difficult for Caroline. [r] is often deleted pre-vocalically:

(17) [uʃ] rouge

[eInko] raincoat

[r] is always deleted post-vocalically:

(18) ca(r), chai(r), ca(r)po(r)t

Sometimes [r] goes to [n] in medial position:

(19) [r] --> [n] [moni] Morrie

Initially [l] goes to [j]:

(20) [jaIt] light

[jajon] lion

[jantʃ] lunch

In final position [l] is usually omitted:

(21) [bɔ] ball

[aʊ] owl etc.

Syllabic [l] goes to [o] or [u]:

(22) [apu] or [apo] apple

Semi-Consonants:

The semi-consonants [w] and [j] are produced with ease:

(23) [w] -- [wɔn] one

[walo] water

(24) [j] -- [ja] yes

[jak] yuck!

Consonant Clusters:

As would be expected, there is a great deal of simplification in the area of consonant clusters:

[s] dropped:

(25) [wIŋ] (s)wing

[pun] or [bun] (s)b/poon

[bæ̃kɛ̃tbɔ] ba(s)ket-ball

[r] dropped:

(26) [wɔk] wo(r)k

[sito] cit(r)on Fr. 'lemon'

[l] dropped:
(27) [kaʊn] c(l)own

There's also a simplification of [kr] to [w]:
(28) [waI] cry

In medial position we see [rd] or [rt] before [i] go to [l]:
(29) [bɛli] birdie

[pali] party

Also, medial [n] before [i] becomes [nd]:
(30) [bandi] bunny

[dandi] Dany

[tɛndi] tennis

[tandi] Stanley

The sequence of medial [t] followed by a liquid in the next syllable seems to be reinterpreted as [lo] or [lu]:
(31) [walo] water

[balo] or [balu] bottle

Another phonological phenomenon found in her speech is reduplication. While Ferguson and Farwell (1975) point out reduplication is one of several general strategies in child phonological development, Caroline's use of reduplication is perhaps also reinforced by French.
French:
Reduplicated forms used by adults:
(32) maman pipi

papa caca

tata tchintchin

tonton etc.

Reduplicated forms in French baby-talk:
(33) dodo nounou

bobo coucou etc.

Reduplicated forms in French nicknames:
(34) Fifi Kiki

Mimi Jean-Jean

English is much more limited using forms such as:

(35) mama

papa

bye-bye etc.

Caroline's extensions with reduplication include the following:

(36) [kokakoka] coca cola

[pantapanta] (Fr. pantalon, i.e. 'pants')

[lili] (Fr. lit, i.e. 'bed')

[dumdum] gum

[pelolo] (Fr. Père Nöel, i.e. 'Santa Claus')

There are certain words or phrases (mainly French) that Caroline uses for play or enjoyment:

(37) [kakawet] Fr. 'peanuts', i.e. cacahuète

[uala] Fr. voilà!, i.e. 'Here/there it is; that's it; (then) it happened', etc.

[mama mi!] French version of the Italian exclamation, Mama mia!

Caroline also appears to have an idiosyncratic form--something so difficult for her that she formed an easy though far-fetched approximation:

(38) [andy] 'ice cream'
(no resemblance to Fr. creme glacé)

Vocabulary--English and French

There are four categories of vocabulary in Caroline's speech with respect to English and French:

Category 1. Caroline knows both the English and French expression and uses both:

[wal]	cheval;	[hɔrθi]	horse
[buteI]	bouteille;	[balo]	bottle
[pupi]	poupee;	[dali]	doll
[wazo]	oiseau;	[bɛli]	bird
[gato]	gâteau;	[keIk]	cake
[ø]	oeufs;	[ɛk]	eggs

Category 2. Caroline is confused when the words are similar. She hesitates or uses both and sometimes she does not know which to use.

[kun] ~ [kaʊn]		clown
[bys] ~ [bas]		bus
[ybE] ~ [juba]		Hubert (name of her stuffed toy lion)
[kol]	ecole ~ [kul]	school

Category 3. Sometimes Caroline is exposed exclusively or primarily to one form (i.e. the English or the French) and therefore knows only one:

English	French	
milk	pipi	'peepee'
dog	caca	'BM'
car	coq	'rooster'
money 'coins'	dodo	'sleep'
book	nounou	'Teddy Bear'
raincoat	barbu	'bearded man'
potty	babaou	'boggy man'
cookie		

Category 4. By far the most interesting category includes those cases where Caroline has been exposed to both the English and French equivalent for an object--but where she consistently avoids or refuses to say the one that is phonologically more difficult in terms of her system--i.e. the starred item in each of the following pairs:

[kuto] couteau/*knife

[pun] *cuiller/ (s)poon

[papijo] papillon/ *butterfly

[om] *maison/ (home)

[kamio] camio(n)/ *truck

[pɔso] poisson/ *fish

[sito] citron/ *lemon

[bɔI] *garcon/ boy

[dam] dame/ *lady

This last strategy has been extended to more complex vocabulary items and, in one instance, resulted in mixing within a compound. As far as Caroline is concerned, all team sports on TV are basketball. After repeated correction during football games by her father and me (recall Caroline's problem with [f] and that the French word for 'foot' is 'pied'), she finally understood the distinction and settled on[peIbɔ] piedball to avoid [f] and persisted in using this form for a long period of time.

Discussion

The above data contain some interesting theoretical and pedagogical implications that I would like to explore at this point.

First of all, we will briefly consider Caroline's second category of words (i.e. French/English cognates with minor variations in pronunciation). It has often been noted that adults who are learning a second language which has many cognate words in common with their native language sometimes studiously avoid these cognates in speech (though perhaps not in writing) because of phonological difficulties. Heller (1976), for example, cites cases of Spanish-speaking adults in evening ESL classes who avoid using cognates because they think such words are Spanish and not English.

Caroline has demonstrated a certain hesitation and vacillation in the use of such words--often switching back and forth several times, wondering which pronunciation to use:
e.g. [bas] . . . [bys] . . . [bas] for bus
Evidently, it is hard for her to keep the two language apart where she has learned cognates with similar sounds. She is not avoiding the cognates but is quite confused.

Could her parents' performance with respect to the use of cognates be partly responsible for the confusion? Her father tends to retain French pronunciation of cognates when speaking English. There is no apparent avoidance--just a tendency to retain as French everything first learned in French even when speaking English. I have always been conscious of the difference in pronunciation between English-French cognates and try to make appropriate adjustments when speaking French. Likewise, there is no avoidance of cognates on my part.

This certainly is an area of language acquisition that deserves further study since so many different strategies

are possible concerning a second language learner's use or nonuse of cognates and performance with respect to using cognate words when speaking and/or writing in the second language.

Secondly, let us focus on Caroline's fourth category of words (i.e. phonological avoidance). The strategy of 'avoidance' has recently been spot-lighted by Jackie Schachter (1974) who suggests that the adult second-language learner will 'avoid' -- either consciously or unconsciously--structures and words that he is unsure of; instead he makes use of synonymous forms or circumlocutions. She further suggests that phonological avoidance or paraphrase is not as likely to occur since the speaker would have to learn to cope with difficult sounds whether he wanted to or not. This is why, speculates Schachter, contrastive analysis has greater predictive value in the area of phonology than in the area of syntax and lexicon, i.e. one cannot paraphrase or avoid certain sounds.

These conclusions may be valid so long as one refers to adult acquisition of a second or foreign language after the native language has been established (i.e. Schachter's frame of reference). However, if one looks at monolingual children acquiring their native language, a number of studies refer to avoidance of difficult sounds or "persistent avoidance of particular sounds" (Ferguson and Farwell, 1975, p.436). Moreover, the above data from Caroline indicate that Schachter's hypothesis regarding the relative nonexistence of phonological avoidance should be modified, particularly in those cases where children are acquiring two or more languages simultaneously. In the data reported above, phonological avoidance was observed as a general and pervasive strategy.

An important question to be asked, of course, is whether other children acquiring two or more languages simultaneously also exhibit the same phonological avoidance strategy that Caroline did--i.e. is the strategy general or idiosyncratic? Rina Shapira (personal communication) provides some affirmative evidence for the notion of a general strategy from her experience of being raised in a family environment where all the children acquired Hungarian and Hebrew simultaneously, and she recalls that phonological avoidance was a strategy frequently used by all the children. Also, in his study of his daughter Hildegard, who was simultaneously acquiring English and German, Leopold comments: "... she generally avoided altogether any words the meaning and form of which she could not successfully cope with" (Leopold, 1939-1949, Vol. I: 172). It should be pointed out that the word 'form' as used in this quote refers specifically to phonological and not syntactic form.

More examples of phonological avoidance from case studies of child language acquisition and also cases of adult phonological avoidance are needed before one can generalize definitively;

however, it seems reasonable to assume that the avoidance strategy can manifest itself in any language area or language learning situation where choices are open to the speaker/learner. In other words, the fact that a monolingual adult learning English as a foreign/second language usually has no phonological choices (i.e. he is neither learning two words for the same referent as Caroline is, nor simplifying to the extent that monolingual children do) is due to his age, learning environment, limited vocabulary and teacher expectations, etc. It it NOT due to the fact that phonological avoidance or paraphrase PER SE is less likely to occur than syntactic or lexical avoidance or paraphrase. In fact it seems that lexical and phonological avoidance would be hard to separate completely since a difficult pronunciation may be one of several reasons why a given lexical item might be avoided--other possible reasons being the user's uncertainty as to the word's meaning, spelling, syntactic restrictions, etc.

If phonological avoidance is indeed a natural and generalized strategy that may occur whenever circumstances permit, there is an important lesson in all of this for the language teacher or the writer of language textbooks. A brief anecdote will illustrate what I mean. One of my former students, who happens to be a junior high school teacher of English in Japan, complained to me about the first-year English textbook he has to use in his classes. In the first lesson the students are introduced to the main character of the text, "Roy", an American their age, and they are expected to learn to understand and say sentences like "This is Roy", "Roy is an American", etc. The problem with this, according to my former student, is that the {r} sound is so hard for the students to articulate, they feel frustrated and defeated before they have completed their first English lesson. Often insurmountable attitude problems develop during this initial lesson (Mamoru Nishimura, personal communication).

It appears that unnecessary phonological barriers may cause psychological problems, stunt fluency, and inhibit ease of learning a foreign language--especially in the initial stage. The writers of the above textbook, for example, could easily have used an American proper name like "Eddie", which would have been less excruciating for Japanese-speaking students to produce than "Roy".

What the preceding data and the above anecdote suggest is that, as far as possible, initial vocabulary items should be selected with reference to the phonological structure of the learner's native language and on the basis of ease of articulation from the learner's point of view. Although common function words with difficult sounds cannot be avoided, proper names and other content words are often arbitrarily selected, and it is these items that should be chosen more carefully so that they pass easily through the beginning learner's

phonological filter and facilitate (or at the very least do not impede) the initial language learning process. Phonologically problematic words and sounds should be dealt with at a later stage and perfect pronunciation very likely should NOT be insisted upon initially, despite the many audiolingual/behaviorist prescriptions to the contrary.

There is additional support for this position from special instances of language use sometimes exhibited by adult English-speaking monolinguals. Ferguson and Farwell (1975: 434), for example, observe that an adult may systematically--even consciously--avoid in his speech words that are difficult to pronounce, and they recommend that studies be carried out to document and further explore this phenomenon. Language teachers and textbook writers should, in all likelihood, not deliberately go against such a natural tendency when preparing materials or lessons for the beginning-level student of English as a foreign/second language.

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